United States Patent [19]

Sibalis

[11] Patent Number: 4,921,475

[45] Date of Patent: May 1, 1990

[54] TRANSDERMAL DRUG PATCH WITH MICROTUBES

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[73] Assignee: Drug Delivery Systems Inc., New York, N.Y.

[21] Appl. No.: 196,664

[22] Filed: May 20, 1988

Related U.S. Application Data

[60] Division of Ser. No. 922,296, Oct. 23, 1986, abandoned, which is a division of Ser. No. 839,050, Mar. 12, 1986, Pat. No. 4,640,689, which is a continuation of Ser. No. 702,486, Feb. 19, 1985, abandoned, which is a continuation-in-part of Ser. No. 660,192, Oct. 12, 1984, Pat. No. 4,622,031, which is a continuation-in-part of Ser. No. 524,252, Aug. 18, 1983, Pat. No. 4,557,723.

[51] Int. Cl.[5] A61N 1/30

[52] U.S. Cl. 604/20; 128/798; 128/802; 128/640

[58] Field of Search 128/639, 640, 641, 798, 128/802, 803; 604/20

[56] References Cited

U.S. PATENT DOCUMENTS

4,325,367	4/1982	Tapper	604/20
4,406,658	9/1983	Lattin et al.	604/20
4,474,570	10/1984	Arivra et al.	604/20
4,640,689	2/1987	Sibalis	128/798

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[57] ABSTRACT

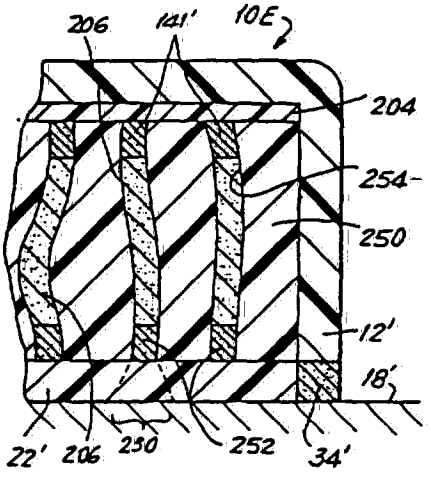
A transdermal drug patch for delivering at least one drug to a patient through the skin comprises:

(a) at least two electrodes forming the patch and separated from each other by an insulator;

(b) a circuit including an electrical power source for supplying power to and electrically connected to the electrodes at a conductive element; and

(c) drug reservoir means in the form of a plurality of microtubes separated from and insulated from each other extending from a conductive element at one end to the surface of the patch interfacing with the patient at the other end of the microtube.

20 Claims, 4 Drawing Sheets



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